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CLAIMS

1. A transmission signal production method comprising the steps of multiplying transmission data by a coefficient sequence of a spreading sequence sequentially shifted one pitch at a time, or multiplying the coefficient sequence of the spreading sequence by the transmission data and sequentially shifting the result one pitch at a time, to produce a plurality of transmission data; and adding up said plurality of transmission data to produce a transmission data sequence.

2. A transmission signal production method comprising the steps of:

multiplying transmission data by a coefficient sequence of a spreading sequence to produce a finite-length signal;

repeating said finite-length signal an infinite number of times to produce an infinite-length signal; and

cutting out transmission data, which is longer than said coefficient sequence, from said infinite-length signal to produce a transmission data sequence.

3. The transmission signal production method according to claim 1 or 2 wherein

a plurality of transmission data sequences are produced using different coefficient sequences and

in an arbitrary combination of said plurality of transmission data sequences, a periodic cross-coefficient function of the transmission data of said transmission data sequences is 0 for all shifts.

4. The transmission signal production method according to claim 1 or 2 wherein

a plurality of transmission data sequences are produced using different coefficient sequences and

in an arbitrary combination of said plurality of transmission data sequences, the plurality of transmission data sequences are transmitted in parallel so that periodic spectrums of the transmission data sequences have no correlation.

5. The transmission signal production method according to one of claims 1-4 wherein said coefficient sequence is a row vector of a DFT matrix.

6. A communication method comprising the steps of:

transmitting the transmission data sequence according to one of claims 1-4; and

receiving transmission data via a matched filter corresponding to said coefficient sequence.

7. The communication method according to claim 6 wherein

said transmission data sequence is used as a pilot signal for measuring multi-path characteristics, and

the received signal has multi-path characteristics of a transmission path.

8. The communication method according to claim 7 wherein

a plurality of transmission data sequences are produced using different coefficient sequences of a spreading sequence and

at least one transmission data sequence selected from said transmission data sequences is used as the pilot signal with other transmission data sequences used as transmission signals, further comprising the steps of:

finding multi-path characteristics from the reception signal of the pilot signal; and

removing the multi-path characteristics from the

reception signal of the transmission signal using the multi-path characteristics, which are found, to produce transmission data.

9. A data structure of a transmission signal comprising a transmission data sequence produced by cutting out transmission data, which is longer than the coefficient sequence, from an infinite-length signal produced by repeating a finite-length signal, produced by multiplying transmission data by the coefficient sequence of a spreading sequence, an infinite number of times.